



WASTE MANAGEMENT OF HAWAII, INC.
92-460 Farrington Highway
Kapolei, Hawaii 96707
(808) 668-2985

December 14, 2009

Hand Delivered

Steven Y.K. Chang, P.E., Chief
Solid and Hazardous Waste Branch
State of Hawaii Department of Health
Environmental Management Division
919 Ala Moana Blvd., Suite 212
Honolulu, Hawaii 96814

**RE: Solid Waste Management Permit Application
For renewal with Modification for Expansion, No. LF-0065-07
Waimanalo Gulch Sanitary Landfill
Located at: 92-460 Farrington Highway, Kapolei, Hawaii 96707**

Dear Mr. Chang:

On behalf of the City & County of Honolulu (CCH), Waste Management of Hawaii, Inc. (WMH), the operator of the Waimanalo Gulch Sanitary Landfill (WGSL), is responding to the Department of Health's (DOH) December 2, 2009 letter concerning comments to our expansion and renewal permit application and engineering design. WMH appreciates receiving and welcomes the opportunity to address DOH's comments.

During our meeting of October 14, 2009 the Department expressed concerns over the number of changes made to the design of the landfill expansion as a result of the DOH comment letters received during your review of the original design, and from the Special Use Permit (SUP) process. It was agreed that WMH would submit a revised Engineering Design Report and update the permit application. Updates to the permit application were submitted on November 2, 2009, and the revised Engineering Report was submitted on November 24, 2009.

Please find enclosed a revised permit application with updated attachments per your request. As agreed during our October 14th meeting, submission of this revised permit application does not restart the permit application review or renewal process schedule, but merely updates the documents so that your ongoing internal review can be timely completed, and the most updated documents will be available for submission to the public repositories.

WMH & CCH respectfully request that the Department confirm that the permit application is administratively complete, initiate the 30-day public comment period as soon as possible, and set a date for the public hearing.

WMH001630

Additionally, WMH provides responses to your specific comments related to the Revised Engineering Report as noted within your letter of December 2, 2009. To help in your review of our responses to your letter, we have quoted each comment below and provided our response thereafter.

DOH Comment #1: *Survey control point matrices for the base grades for cells E5 and E6 were not provided.*

WMH Response #1: Due to advancements in technology, over the past few years, WMH's consultants such as Geosyntec Consultants, Inc. (Geosyntec) and GEI Consultants, Inc. and others have moved away from providing construction control points and instead have provided an electronic file (typically in Autodesk's AutoCAD Civil 3D) with the excavation and fill grades to the general contractors together with the construction drawing. Benchmarks are provided to the contractor for reference. This allows the contractor to: (a) import the electronic file directly into the global positioning system (GPS) which is set up on the construction equipment for the construction project, (b) create a model/layout that he/she provides to the consultants for confirmation, and (c) provide the information to the project's surveyor so the surveyor can layout the job and check the grades as construction progresses. This is now the practice on most projects we work on and has resulted in greater efficiency and accuracy in project construction execution.

To respond to DOH's request, we are also providing a list of key control points as shown in Figure 1.

DOH Comment #2: *The extent, configuration, and elevations of the leachate removal sump cannot be determined because of the lack of elevation control points and horizontal and vertical dimensions. The compliance level cannot be determined. The sump area is required to have a double liner, if it is to have more than 12 inches of head. WMH has recently indicated a preference to duplicate sump risers and its placement on flat stock, as shown on the West Hawaii Landfill drawings, and in the repair to the 4B sump riser problem. Please explain the change in preference, as we also preferred the redundancy and added protection.*

WM Response #2: As described above, the grades in the area of the sump are provided electronically to the contractor. Additionally, the above list also provides a few sump control points for your understanding.

WMH will be pumping leachate as needed to maintain a maximum 12 inch head of leachate above the liner system. Since the sump will have more than 12 inches of leachate, therefore, as requested, we have added a double liner in this area. Also, as requested, we have incorporated a duplicate sump riser and placed both risers on a flat HDPE rub-sheet which is functionally superior to flat stock. The items described are shown on Drawings 8, 9, and 10.

DOH Comment #3: *The subdrain trench containing the 30-inch and 36-inch diameter HDPE pipes, intending to drain surface water from the upper reaches of the gulch, do not have invert elevations and details on how the HDPE pipes are to be supported.*

WM Response #3: The pipe in a trench design cited by the HDOH was modified. Stormwater from the upper reaches of the landfill footprint and, temporarily, flow from the drainage located east of the old Nike site will now be conveyed in a single 36-inch diameter HDPE temporary diversion pipe that will discharge into the existing concrete channel downstream of the temporary stockpile (approximately 1,600 feet upstream of Farrington Highway). The 36-inch diameter HDPE temporary diversion pipe will be inserted into the east existing CMP, and the west CMP will be abandoned by capping at the upstream and downstream ends once the west side drainage channel has been completed. After the downstream end of the 36-inch HDPE pipe exits the east CMP, it will be placed next to the Western Surface Water Drainage Pipe in the existing channel and backfilled with controlled low strength material (CLSM). The downstream portion of the existing concrete channel will be preserved to convey discharge for the temporary diversion pipe and the interior landfill drainage to the existing sedimentation and stilling basin.

This modification is described in Appendix G, Western Bypass Channel of the *Revised Engineering Report for Landfill Expansion* submitted to the HDOH on 24 November 2009. We have attached drawings (C-16 through C-20) showing plan and profile details of the 36-inch HDPE temporary diversion pipe to supplement the description of the system provided in Appendix G.

DOH Comment #4: *Details of the connection of the new subdrain HDPE pipes to the existing 48-inch diameter corrugated metal pipes (CMPS) in the existing concrete channel are not provided. Portions (about 480 lineal feet) of the existing concrete channel and CMPS are to be removed, and the new subdrain HDPE pipes will connect to the existing CMPS downslope of the bottom of cell E6. Without invert elevations for the new subdrain trench and the existing CMPS, it is not known what elevation adjustments will be needed for the new HDPE pipes, which are running seven (7) feet below the cushion layer underlying the base liner, to meet the existing CMPS. It would appear that the HDPE pipes would need to rise up to meet the CMPS.*

WM Response #4: The temporary surface run-on drainage control will now consist of a single 36-inch HDPE temporary pipe as discussed in the Response to Comment No. 3 above and depicted in attached Drawings C-16 through C-20. The temporary diversion pipe will be inserted into the existing, eastern 48-inch CMP located below the West Berm area. As shown on attached Drawings C-17 and C-18, the HDPE pipe will extend through the remaining length of the 48-inch CMP and then exit the CMP in the existing channel beneath the proposed stockpile area. These drawings also show invert elevations for the 36-inch HDPE diversion pipe in the Cell E6 area and West Berm areas. The HDPE diversion pipe invert elevations in the West Berm area are based on the approximate location and grade of the 48-inch CMP pipe and alignment of the existing channel (i.e., the invert of the 48-inch CMP was placed in the existing channel). Based on the alignment shown on Drawing C-17, we do not anticipate the HDPE pipes will need to rise up to meet the CMP invert elevation.

DOH Comment #5: *The subdrain trench design does not agree with the planned western drainage system that was previously presented in the Engineering Report for Landfill Expansion, prepared by Geosyntec, Inc., and dated March 12, 2008, and in the Western Surface Water Drainage Project, prepared by DEI Consultants, Inc. and dated June 2009. The installation of such a large (7 feet high by 12 feet wide) trench with pipes under the base liner was unexpected, and raises concerns including, but not limited to the ability of the temporary stormwater drains to handle 25-year 24-hour storm flows. We assume that this portion of the stormwater system will be in operation before the entire western drainage system is constructed. In addition, the new HDPE surface drain pipe inlet details shown on sheet 12 show that compacted fill will be used to support the inlet structure. The grading drawings do not show the configuration of berms or other earthen structures that would be needed to serve as headwalls for the inlet structures. Since the existing surface drainage from above the landfill uses two 48-inch CMPs with about an 8 to 11 foot high headwall and an overflow channel above the pipes, it appears that the proposed 30-inch and 36-inch HDPE pipes may not be adequate to handle peak storm flows without an overflow capability. Please include the headwall design and explanation of how overflows will be avoided during peak flows in the updated drawings.*

WM Response #5: WM has developed a plan for the temporary diversion of natural site run off during the period of time prior to completion of the Western Drainage system. There will be a period of several months in the late spring and summer prior to completion of the Western Drainage system when potential storm water inflows from Waimanalo Gulch would report to the areas of Cells E6 and E7. As can be observed on Figure 2, the plan includes the following:

- A temporary berm at Elevation 520 in future Cell E7 to create a small detention pond outletting to a new 36-inch diameter HDPE pipe which will be constructed along the floor of Cell E6 as part of surface water control during landfill operations.
- At the southern end of Cell E6, the 36-in pipe will be inserted through the eastern-most, existing 48-inch diameter CMP temporary pipe under the currently-constructed West Berm. The 36-inch pipe will be routed inside the 48-in diameter CMP and into the existing concrete channel and stilling basin. In the event of a larger storm inflow during the construction period, the stormwater would be routed over a protected section of the temporary berm into the E6 cell which would provide supplemental storage to control off-site drainage.
- As a precaution, WM will deploy a temporary 6 mil sacrificial geomembrane over existing waste-filled areas to control stormwater contact with the currently-placed MSW and minimize the amount of water that can percolate into the waste. The sacrificial geomembrane will be deployed in advance of a forecasted major storm event as a contingency.
- Also, as a precaution, the southern portion of the temporary berm at Elevation 520 will be surfaced with an erosion apron consisting of an HDPE liner overlain by on-site rock materials to minimize erosion damage to the temporary berm.
- Excess pondage would be routed back to the 36-in HDPE pipe for drainage as stated above or into the existing western 48-inch CMP for routing down the existing concrete channel and into the stilling basin. Therefore, the western 48-inch CMP under the West Berm will remain open to receive storm inflows that exceed the capacity of the 36-inch pipe.

- After the waste covers the entire expansion area and the northern portion of the run-on control channel has been completed, the 36-inch pipe will be abandoned and grouted shut.

Details of the temporary drainage provisions are shown on attached Figure 2. These types of temporary drainage provisions are commonly used on diversion projects during short windows of time prior to completion of permanent water diversion projects. We believe the above plan maintains positive drainage at the site, has provisions to handle larger flows including a 25-year 24-hour event, and is the most cost-effective option. Since the majority of the Western Drainage system work will occur during the late spring and summer, the risk of larger winter storms is lower. We anticipate that during smaller storm events, storm inflows will be contained within the future Cell E7 area and conveyed through the new 36-inch HDPE pipe without flowing into Cell 6 and impacting the downstream areas.

DOH Comment #6: *The submitted permit drawings for the temporary surface run-on drainage show 30-inch and a 36-inch running under the base liner in Cell E6 and connecting to the existing 48-inch CMPS below the Cell E6 lower boundary. Drawings received via email on October 14, 2009 prepared by DEI Consultants, Inc. and forwarded via WMH show how the proposed 84-inch Hobas pipe of the western drainage system will tie into the existing concrete drainage channel under the area of the proposed stockpile. This drawing shows one 48-inch CMP will be cut and plugged, and a 36-inch HDPE pipe running out of the other 48-inch CMP. This leaves questions as to whether the 30-inch and 36-inch HDPE pipes are to connect to the existing 48-inch CMPS or are to run inside the CMPS, and what happened to the 30-inch HDPE pipe. Please clarify.*

WM Response #6: Please see the response to Comment No. 4. The 30-inch HDPE pipe will no longer be installed. The temporary surface run-on control will now consist of a single 36-inch HDPE pipe located beneath Cell E6 and inserted through the eastern 48-inch CMP culvert downstream of Cell E6. Figure 3 shows the inlet structure for the drainage pipe.

DOH Comment #7: *The east/west perimeter termination of the base liner in Cells E5 and E6 are not designed to prevent surface water infiltration under the liner, based on the drawing, Detail C/5. The liner terminates short of the 2 feet overlap from the upstream end of the bench, which will allow water to infiltrate through the operations layer to travel under the liner, which could impact the quality of liner downstream, particularly of existing lined sections. We suggest that the HDPE liner for the surface water ditch be extended to create a minimum of 2-feet overlap over the underlying liner system, to prevent surface water to seep beneath the liner. We note that the expansion liner system contains a lower 40-mil HDPE liner; however, the downstream Cells E4 and 11 do not.*

WM Response #7: As requested by HDOH, Figure 4 shows the revised liner termination at the bench which will also be included in the Construction Drawings. As can be observed, the HDPE liner for the temporary surface water ditch has been extended to achieve the requested 2 ft overlap.

DOH Comment #8: *The LCRS drain pipe for cell E5 shown on sheet 3 runs to the eastern end of the cell and terminates without a means of leachate removal shown.*

WM Response #8: As can be observed, Sheet 3 of the *Cells E5 through E8 Drawings* calls out Detail E5 at the end of the LCRS pipe on the bench. Detail E and Detail E1 on Sheet 5 show a schematic and an elevation with the perforated HDPE bench LCRS pipe terminating within a leachate infiltration trench. The leachate infiltration trench flows toward the landfill; therefore, leachate flows across the bench and discharges onto the lower sideslope. The lower side slope is connected to the leachate collection and removal system on the base (See Detail M3 on Sheet 7).

DOH Comment #9: *Details not provided for permanent anchor trench/liner termination at southern edge of cell E5, and surrounding surface water control system along the liner termination.*

WM Response #9: As can be observed, Sheet 3 of the *Cells E5 through E8 Drawings* calls out Detail N7. Detail N3 on Sheet 7 shows the termination at the southern edge of Cell E5. Another termination is shown on Detail C3 on Sheet 5. Please note that some of these terminations are temporary because the landfill will extend to a higher level. Permanent anchor trenches will be designed as part of future development. Furthermore, for reference, permanent anchor trenches are needed only until waste fill reaches the crest of the anchor trench.

DOH Comment #10: *Drawings for E5/E6 plan show a different cell layout from the engineering report drawings in the original application. Even this engineering report for E5/E6 stability analysis makes reference to E5 to E11 as expansion cells while the referenced drawing only goes to E9. For permitting purposes, these descriptions need to be consistent.*

WM Response #10: Attached Figure 5 shows the current cell layout; for reference, Figure 6 of the *Revised Engineering Report for Landfill Expansion* dated 24 November 2009 prepared by Geosyntec shows the updated cell limits.

DOH Comment #11: *The lack of the CQA for the West Berm does not allow DOH to review the construction of the berm, including the MSW cover layer beneath the berm and liner tie-ins. DOH requests that submittal of the CQA be packaged to reflect work done to date and submitted within 30 days of this letter.*

WM Response #11: WMH and their Consultant AECOM is assembling the CQA report for the west berm and expects to have it submitted within 30 days of receipt of your request.

WMH trusts that this information fully addresses your request and that the parties will continue to work together to ensure a timely issuance of the draft permit and commencement of the public comment period.

Please contact me at (808) 668-2985 with any questions or comments on this response.

Sincerely,



Joseph R. Whelan
General Manager
Waste Management of Hawaii, Inc.

cc: Mr. Tim Steinberger (City & County of Honolulu)
Ms. Janice Fujimoto (DOH)
Mr. Thomas Miyashiro (DOH)
File

Attachments:

Figure 1 – Schedule of Typical Construction Control Points
Figure 2 – Temporary Surface Water Control
Figure 3 – Inlet Structure
Figure 4 – Typical East/West Perimeter Termination Detail Along Bench
Figure 5 – Cell Layout
Drawing 8 – Containment System – Details IV
Drawing 9 – Containment System – Details V
Drawing 10 – Containment System – Details VI
Drawing C-16 – Plan and Profile Temporary Drainage – Sta. 0+00 to Sta. 15+00
Drawing C-17 – Plan and Profile Temporary Drainage – Sta. 15+00 to Sta. 30+00
Drawing C-18 – Plan and Profile Temporary Drainage – Sta. 30+00 to Sta. 38+10
Drawing C-19 – Plan and Details – Surface Drainage of Excavation Benches
Drawing C-20 – 84-inch and 36-inch HDPE Details in Concrete Lined Channel

ATTACHMENTS

Figure 1 – Schedule of Typical Construction Control Points

Figure 2 – Temporary Surface Water Control

Figure 3 – Inlet Structure

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Drawing C-20 – 84-inch and 36-inch HDPE Details in Concrete Lined Channel

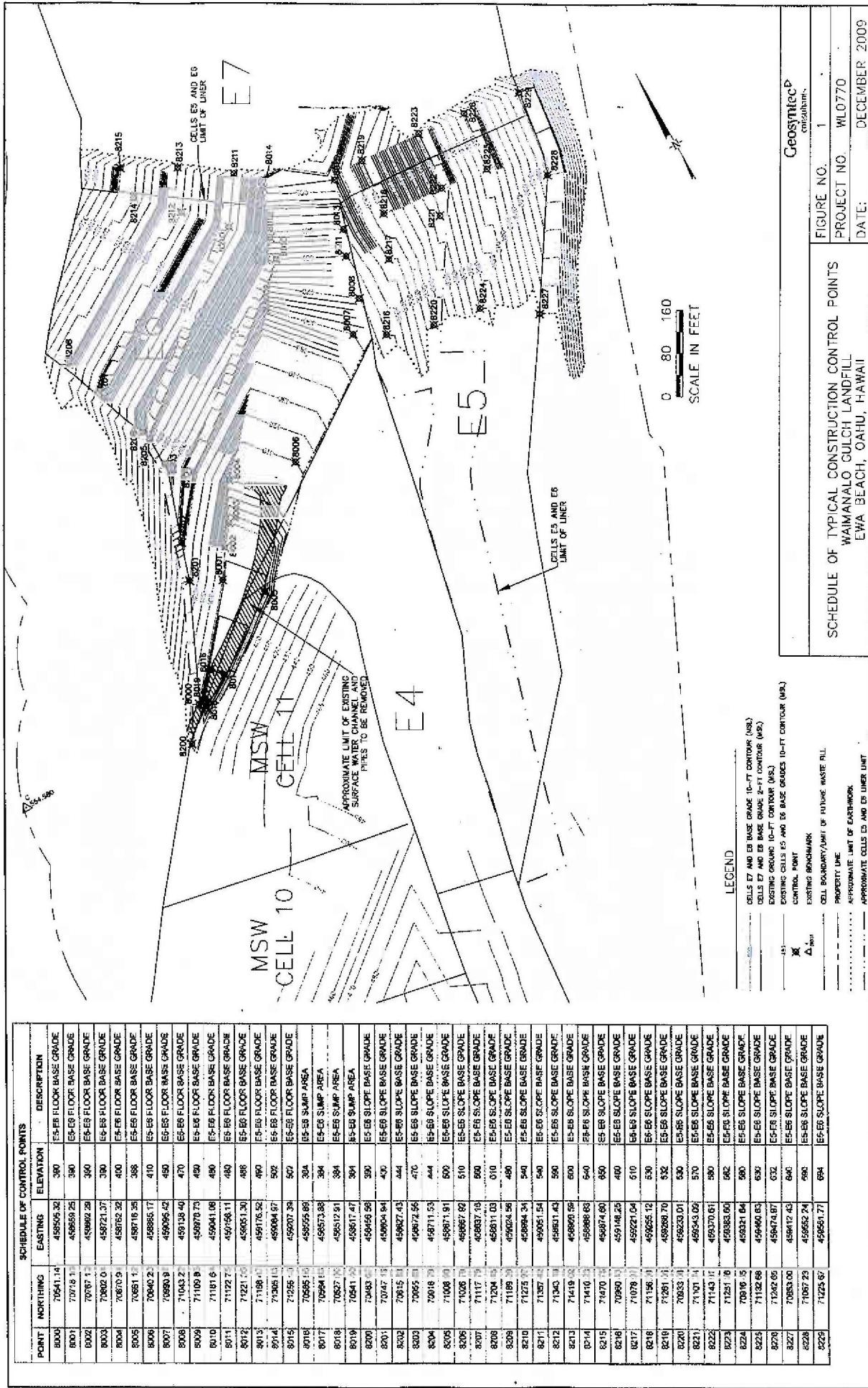


FIGURE NO.	1
PROJECT NO.	WLD770
DATE:	DECEMBER 2009

SCHEDULE OF TYPICAL CONSTRUCTION CONTROL POINTS
WAIMANALO GULCH LANDFILL
EWA BEACH, OAHU, HAWAII

Geosyntec[®]
consultants

WMH001638

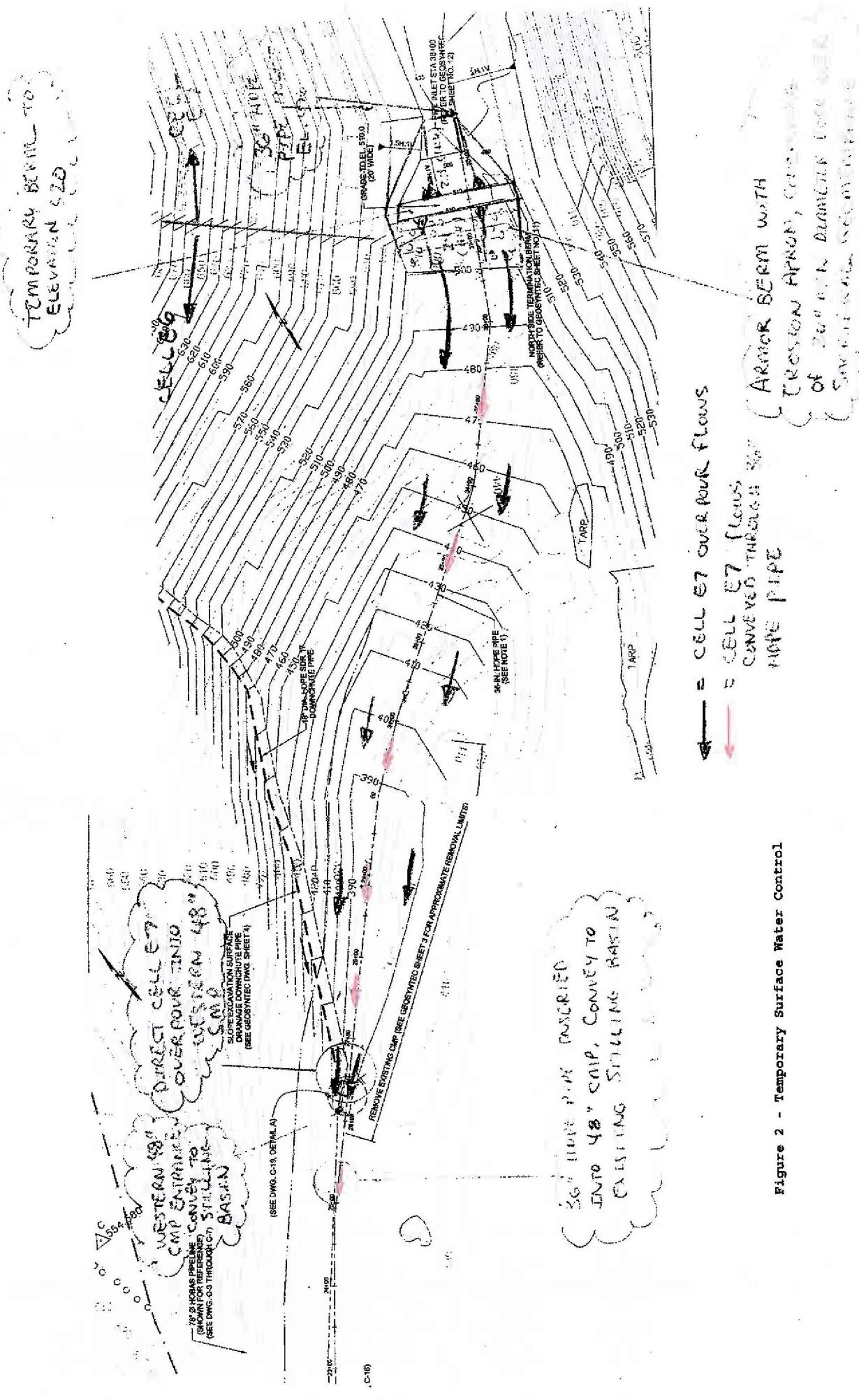
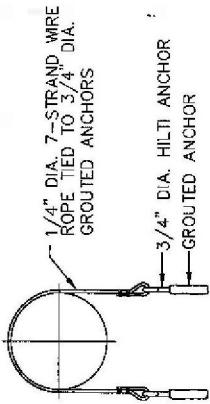
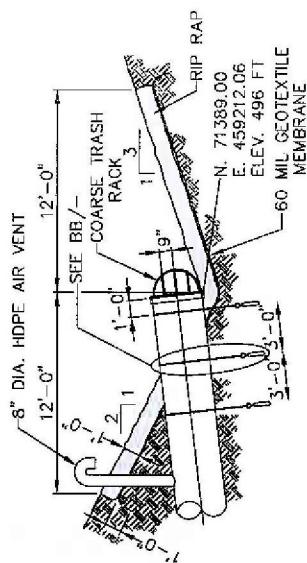
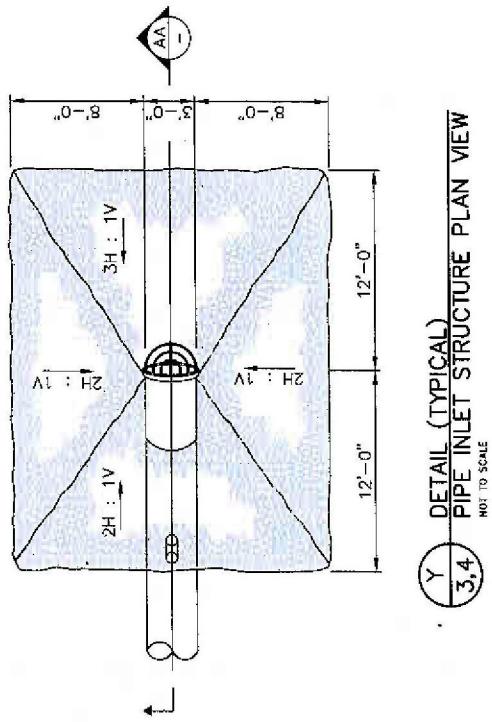


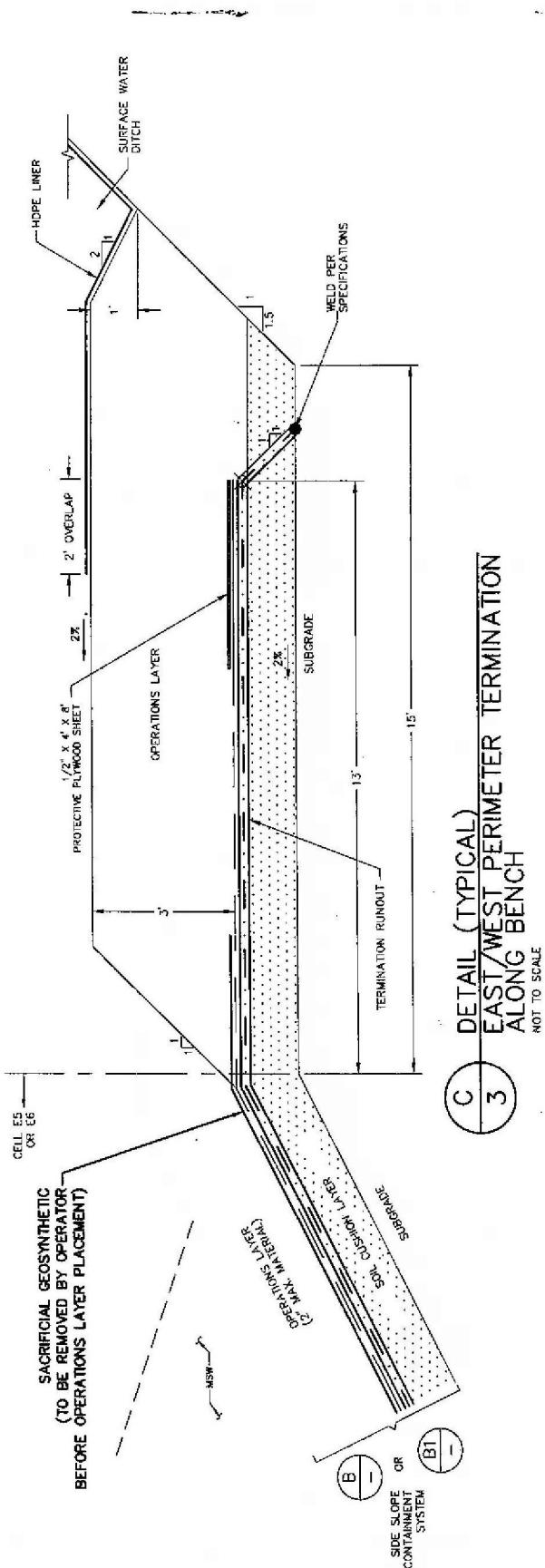
Figure 2 - Temporary Surface Water Control

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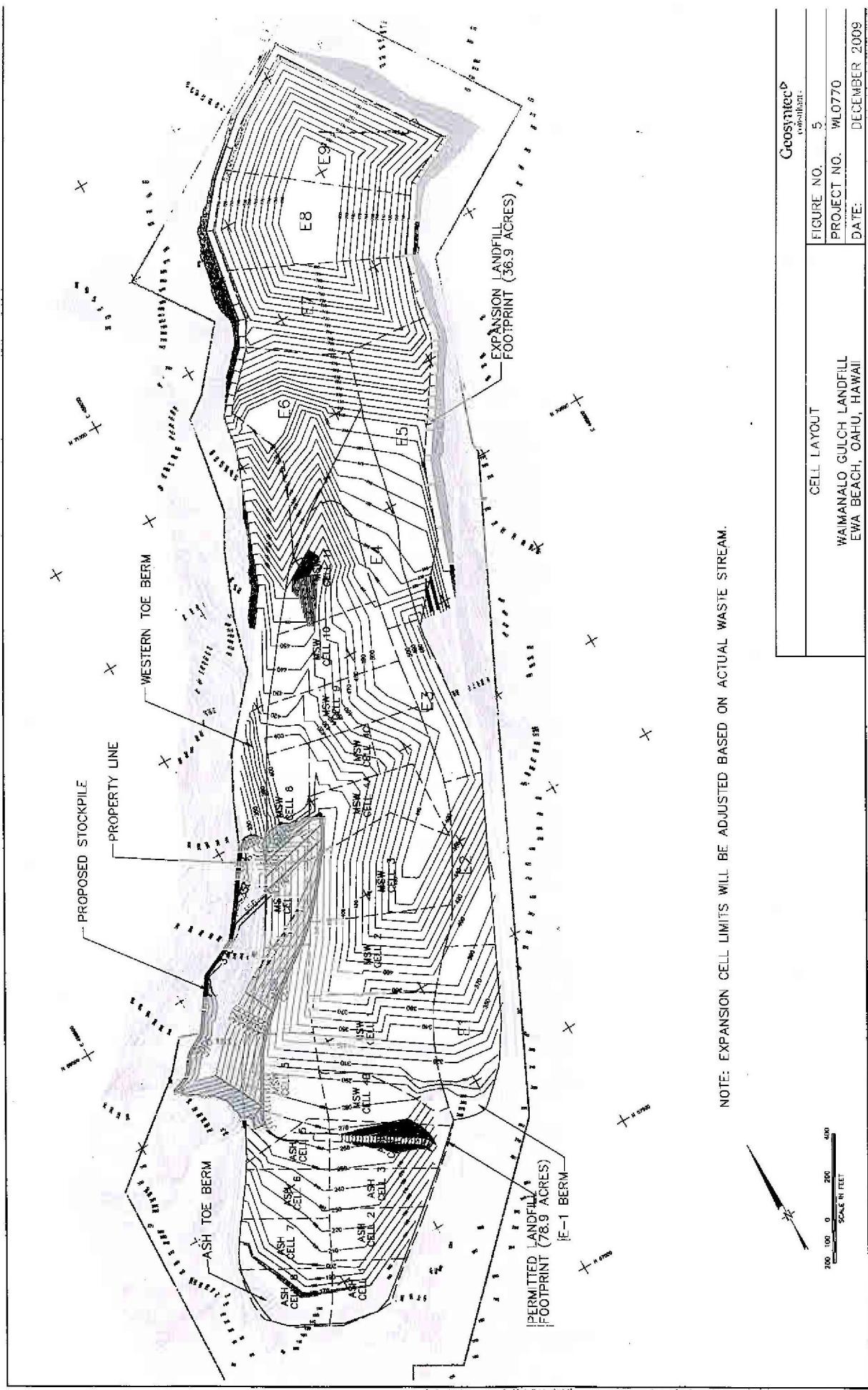
Geometric □	
FIGURE NO.	3
PROJECT NO.	W0070
DATE:	DECEMBER 2009

WMH001640



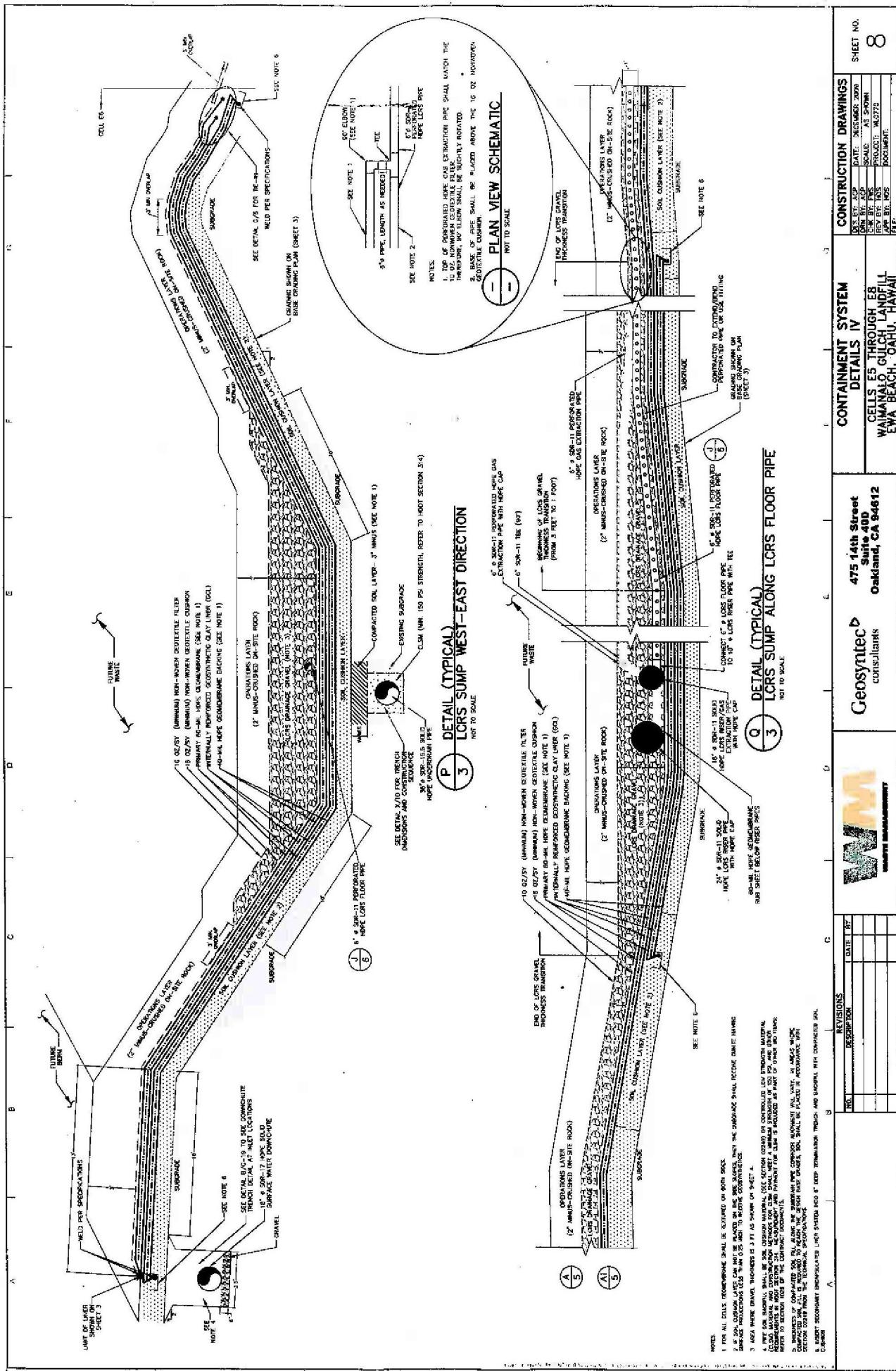
Geosynec [®] Contractors	
FIGURE NO.	4
PROJECT NO.	WEQ770
DATE:	DECEMBER 2009

WMH001641

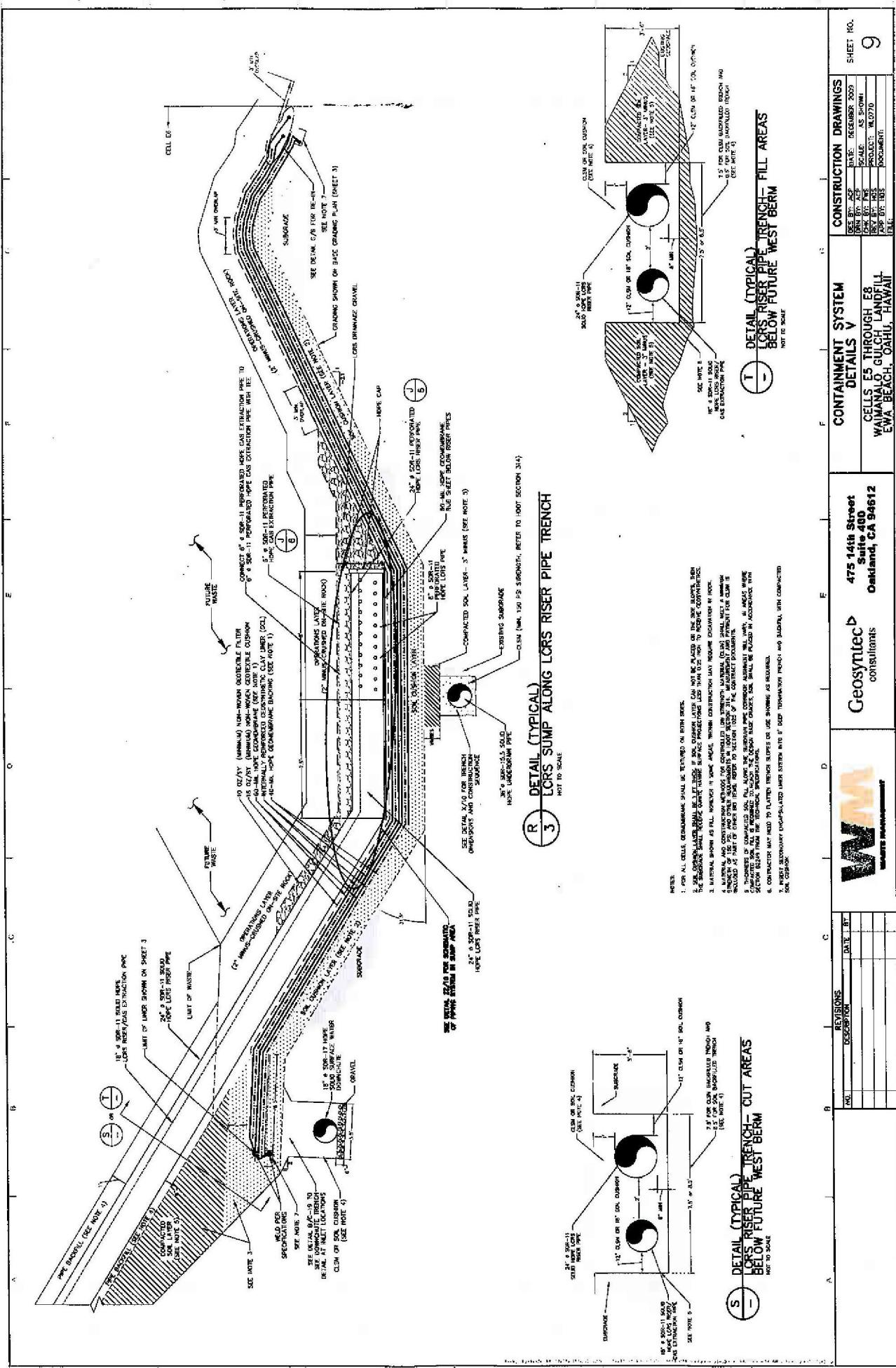


NOTE: EXPANSION CELL LIMITS WILL BE ADJUSTED BASED ON ACTUAL WASTE STREAM.

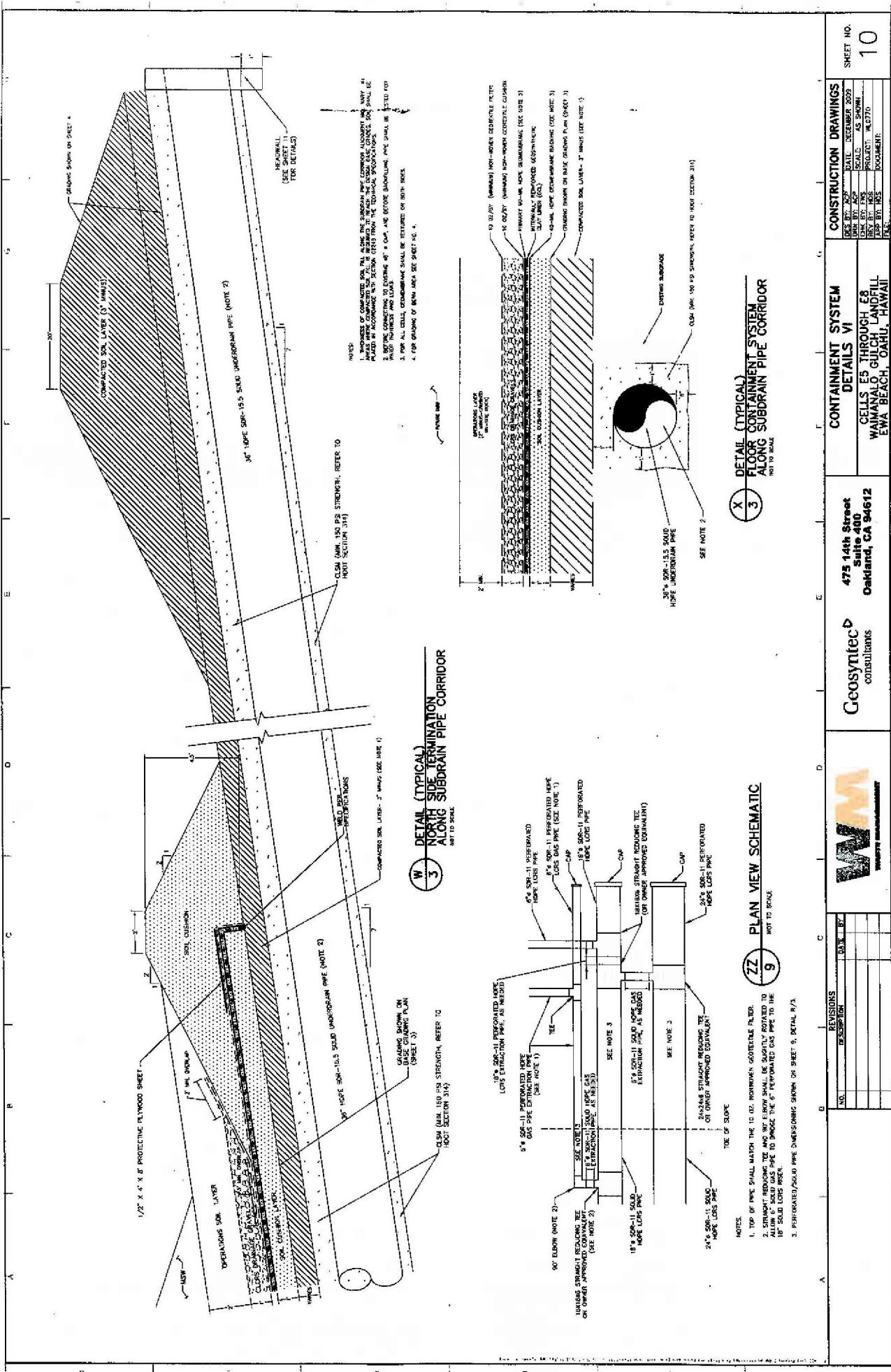
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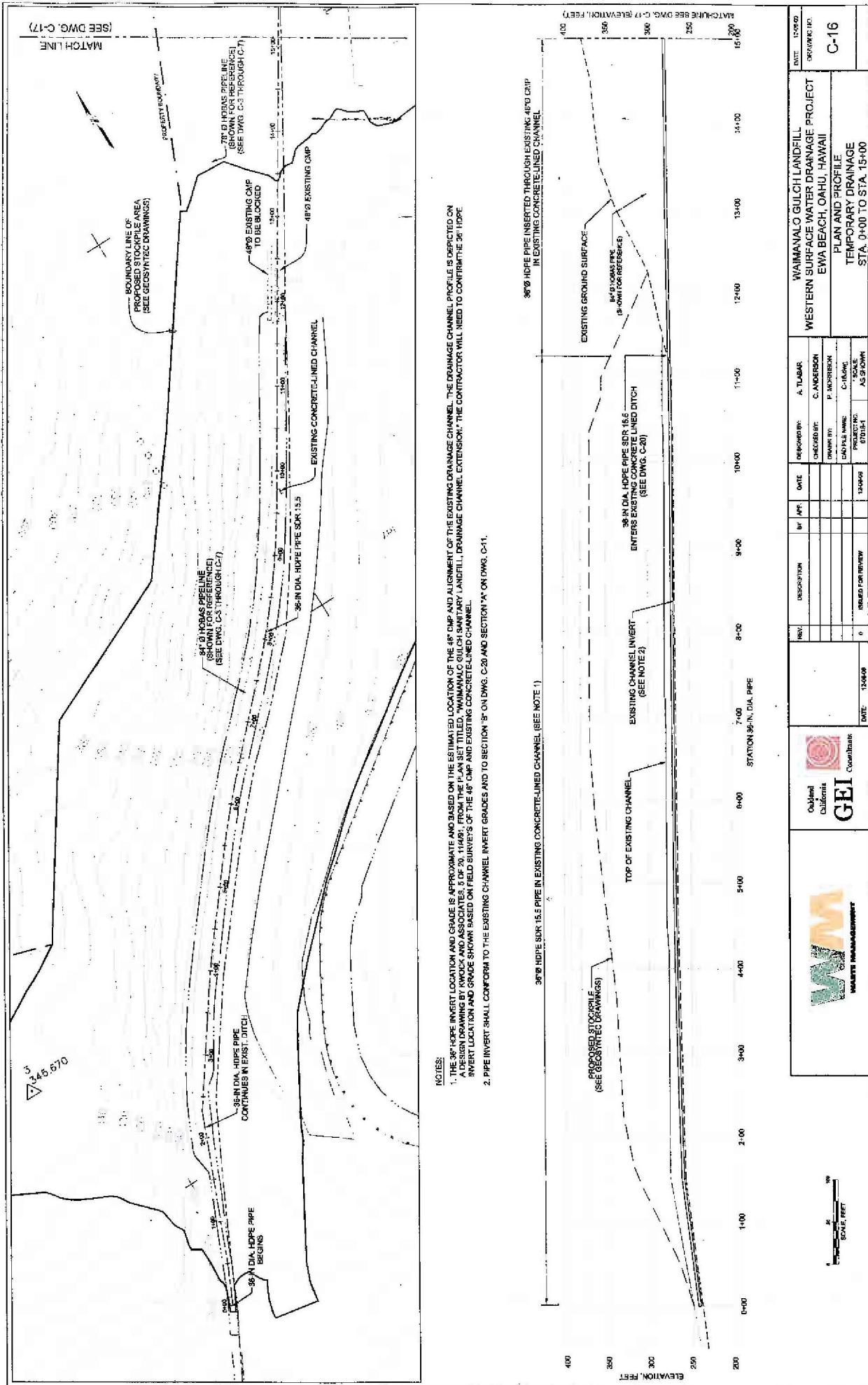
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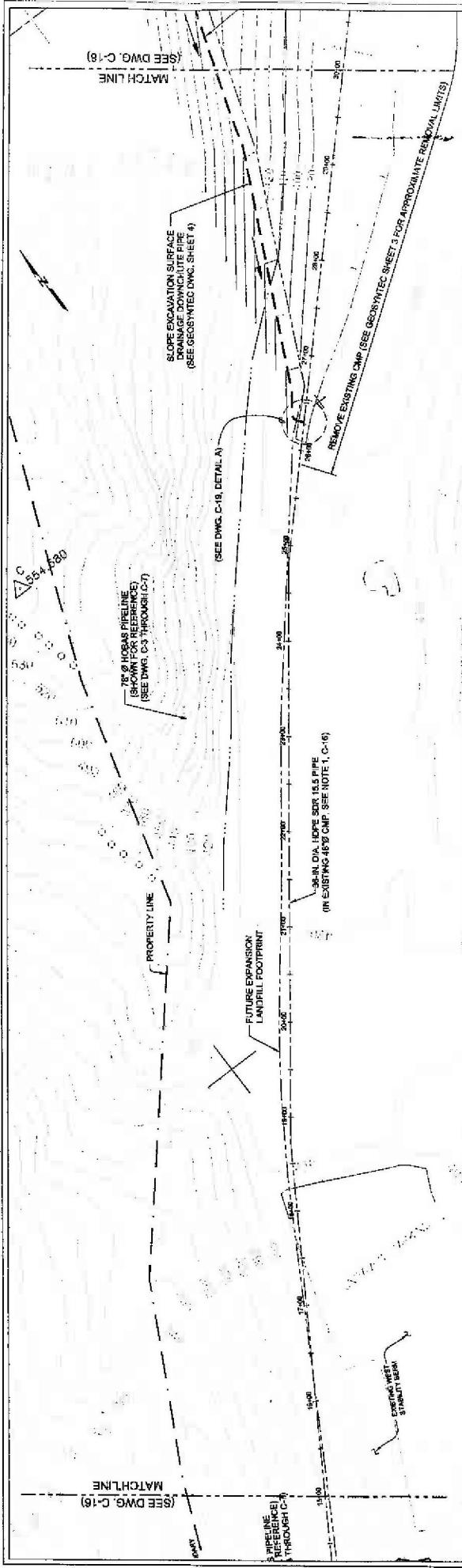
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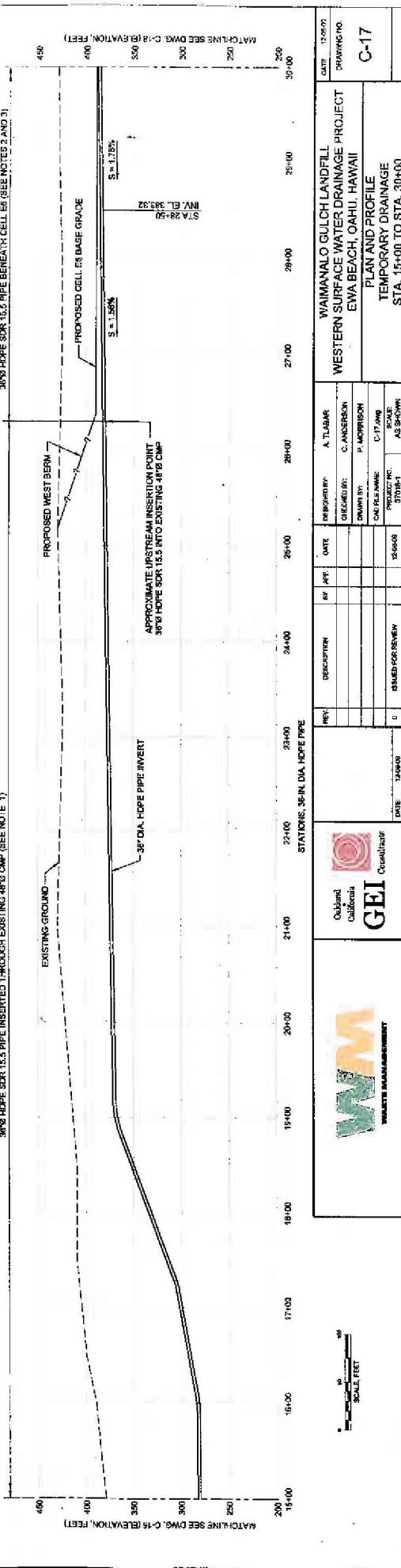
NOTES

1. THIS DRAWING PERTAINS TO THE INVERT LOCATION AND GRADING APPROXIMATELY AND BASED ON THE ESTIMATED LOCATION OF THE 48" CAP AND ALIGNMENT OF THE EXISTING DRAINAGE CHANNEL. THE DRAINAGE CHANNEL PROFILE IS DEPICTED IN FIGURE 1. THE 36" DRAWING PERTAINS TO THE INVERT LOCATION AND GRADE SHOWN BASED ON FIELD SURVEYS OF THE 48" CAP AND EXISTING CONCRETE-LINED CHANNEL PIPE.

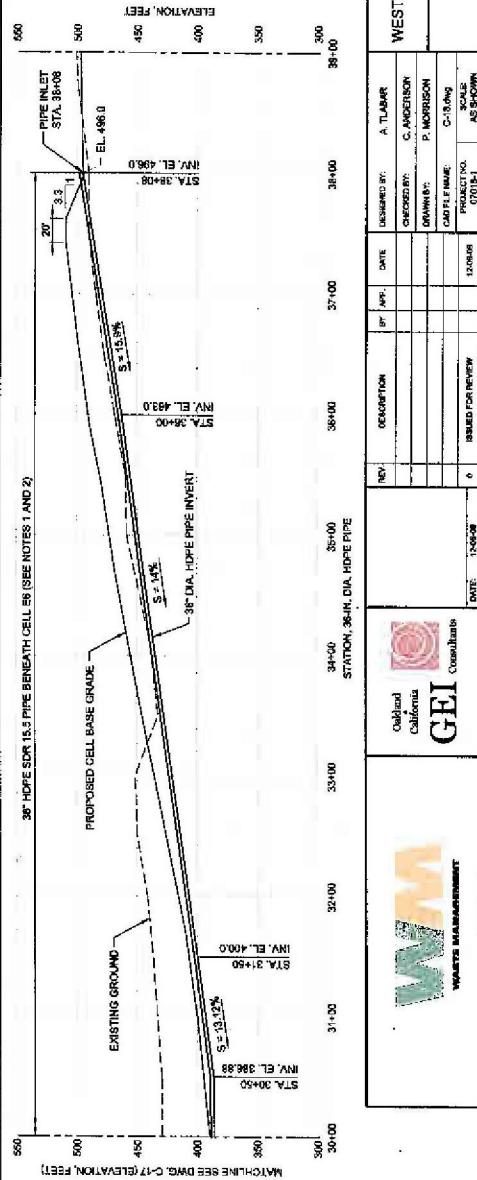
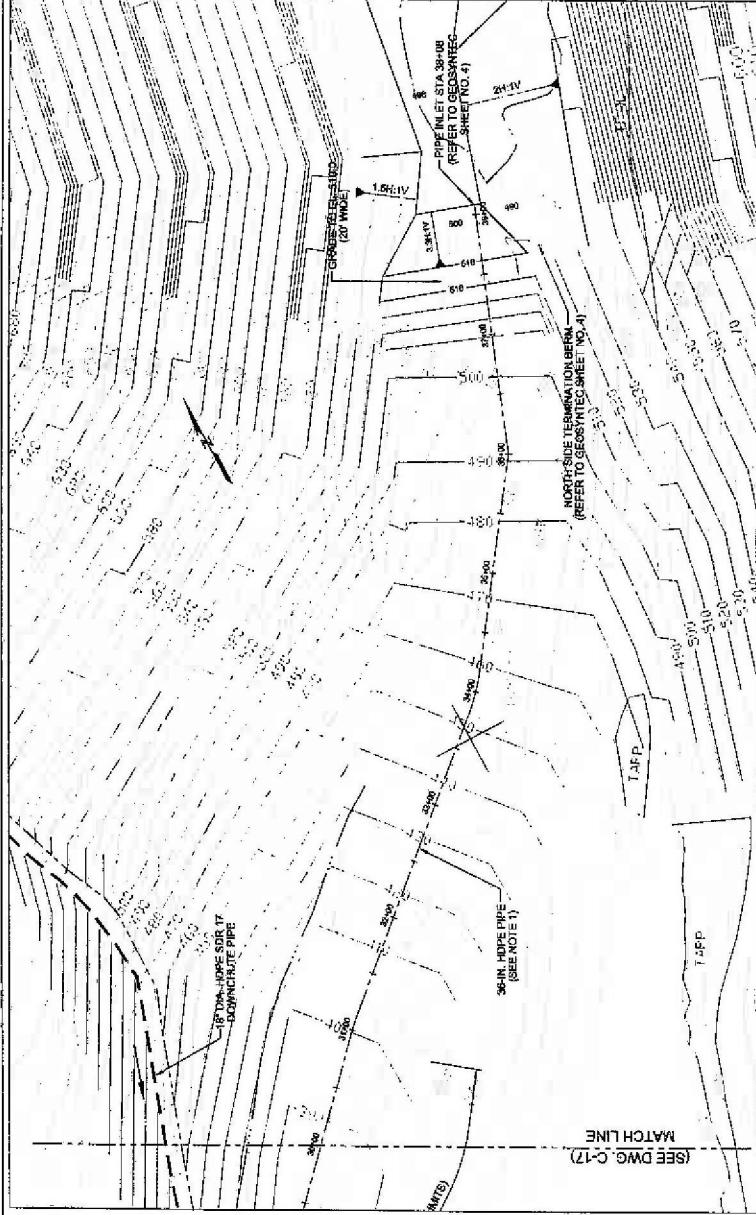
2. REFER TO GEODRAWS DRAWING SHEET NO. 3 FOR CELL EB SURVEYS

3. REFER TO GEODRAWS SHEET 1 FOR PROPOSED CELL EB BASE GRADING.

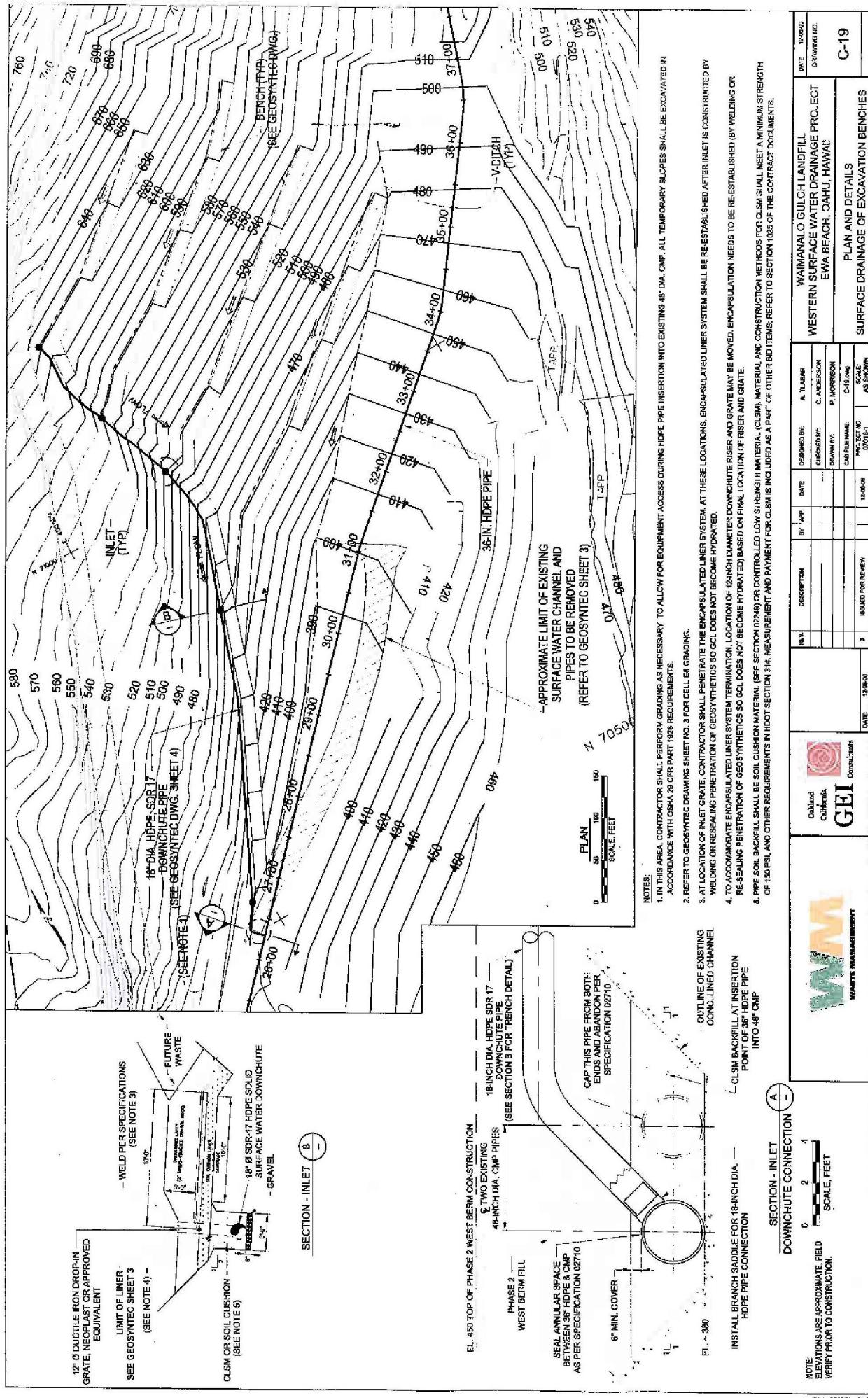
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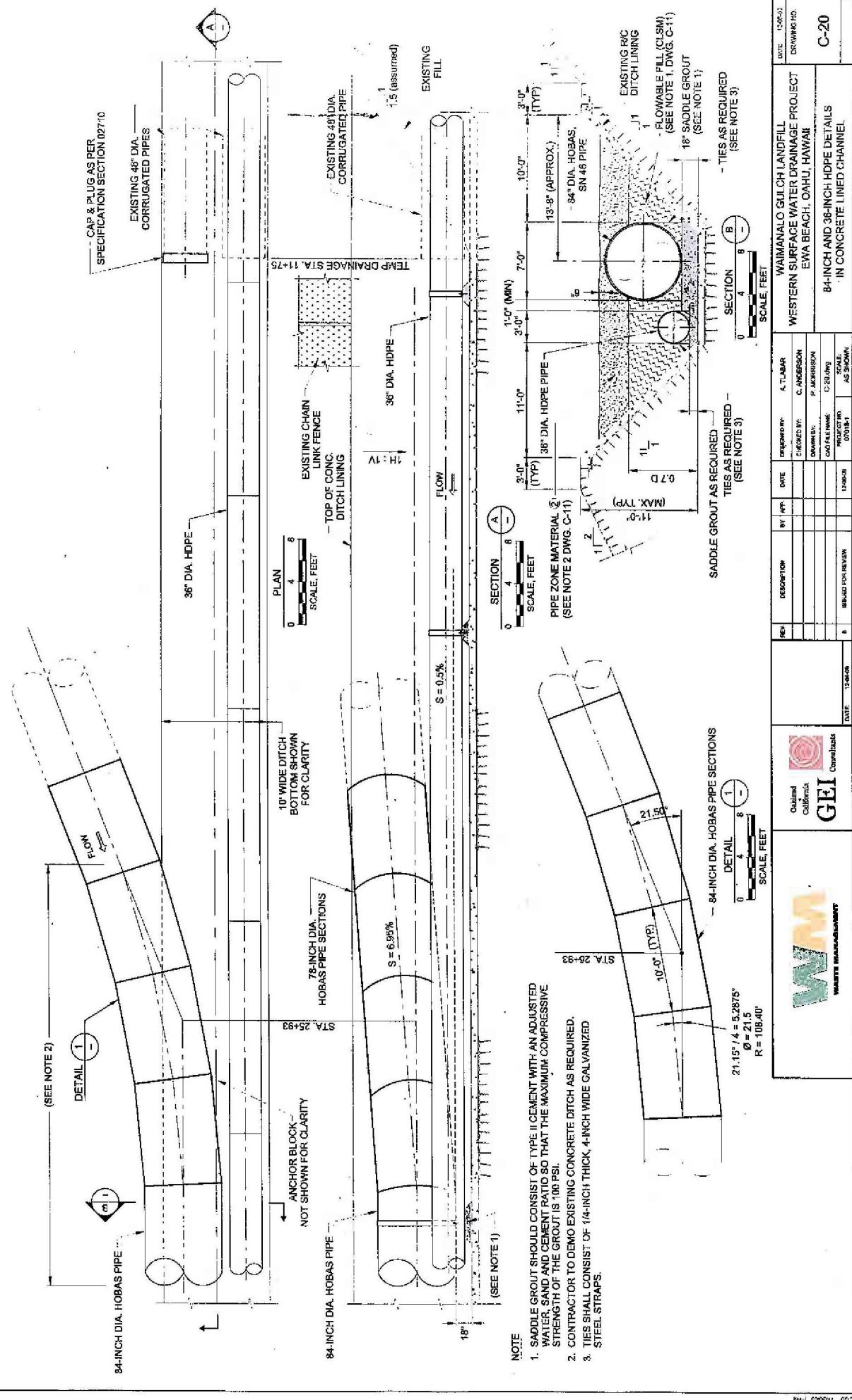
WMH001647



WMH001648



WMH001649



NOTE

WMH001650

From: Origin ID: HNLA (808) 668-2985
 Natalie Corella
 Waste Management of Hawaii
 92-460 Farrington Hwy
 Kapolei, HI 96707



Ship Date: 15DEC09
 ActWgt: 1.0 LB
 CAD: 5966713/NET9090
 Account#: S *****

Delivery Address Bar Code



Ref #
 Invoice #
 PO #
 Dept #

SHIP TO: (808) 668-2985 BILL SENDER

Timothy Steinberger
City County Refuse Division
1000 ULUOHLIA ST

KAPOLEI, HI 96707

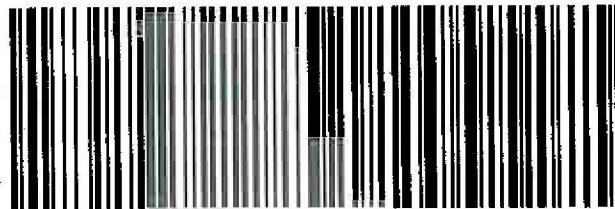


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